Collaboration, Group Interaction, and the Access Grid

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- Two layers of CVE:
  - Technology layer
  - Human factor layer
- Goals of technology layer:
  - Map real world into virtual and then make it more than real
  - Replace routine, physical human activities
  - Facilitate innovative, mental human activities
- Goals of human factor layer:
  - Understand cognitive limitations and social conventions within & without CVE

- Various focuses on human factor layer:
  - Computer Hardware
  - Software
  - Perceptual aspects of input and display devices
  - Cognitive aspects of human users
  - Group-level interaction
  - Organizational contexts
- Collaboration at the higher levels

- Human factor view of collaboration:
  - To make collaboration successful, we need to understand the cognitive limitations and social conventions that shape collaboration and influence the productivity of individuals and groups involved in collaboration
- Technology view of collaboration:
  - To design an effective CVE, we need to carefully rethink those limitations and conventions with additional considerations from the perspective of technology

- A simple idea behind collaboration:
  - Together we should do our jobs better than if we did separately
- Types of togetherness for cognitive purpose:
  - Physical: face-to-face interaction
  - Virtual: mediated interaction
- Types of togetherness for social purpose:
  - Within group: goal congruence, strong tie for social support, high consensus
  - Cross boundary: fresh thinking, different skill & knowledge

- Why together we should do our jobs better?
- The complex rationales of collaboration:
  - Learning from and with partners
  - Managing risk and sharing costs of new projects
  - Technology exchanges
  - Resource & knowledge dependency
  - Interdisciplinary research
  - Exploiting economies of scale
  - Low-cost entry into new markets, new industries, and new industry segments
  - Low-cost exit from industries and industry segments
  - Existence of CVE

- The alternatives to collaboration:
  - Market purchase
  - In-house solution
- Whether we should choose market purchase or in-house solution or collaboration for particular activity depends on the importance of that activity and our competence to do it

- The processes of collaboration:
- 1. Preparation: looking for the ideal partner
  - Strategic fit vs. cultural fit
  - Limited network & bounded rationality
  - CVE as default information clearinghouse
- 2. Formation: between market and hierarchy
  - Interactive community for collaborative learning
  - Lateral relation for information and new ideas to flow more easily
  - Persistent communication channel for casual encounter and conversation to generate innovation

- The processes of collaboration (continued):
- 3. Operation: overcome collaborative inertia
  - Trust and commitment: the most important issues of collaboration
  - Procedural trust: follow professional routines
  - Personal trust: build personal ties
  - Institutional trust: look for brand names & symbols
  - Transparency: keep your partners posted
  - make clear commitments: make transaction-specific investments
  - Define explicit responsibilities and parameters

- Collaboration activities that can be replaced by CVE technology:
  - Calculation
  - information store and retrieval
- Collaboration activities that can be facilitated by CVE technology:
  - Partner selection: from “Invisible College” to virtual environment
  - Discussion and reaching consensus: mediated, real time interaction
  - Data analysis: information visualization
  - Increased transparency: information sharing
  - User behavior change

- Other collaboration activities that CVE technology can't help easily:
  - Organizational capacities to manage external and internal relationships
  - Competition for control of activities that come under the purview of two or more separate organizations
  - Human resource management
  - Improving cultural fit across organizations

- The Access Grid (AG) and group collaboration:
  - Media richness of AG: larger-than-life display for immediate feedback
  - Clearly defined public space in AG: presence with perceived purposes
  - Meeting made easy but communication made formal: casual encounter and conversation practiced less frequently
  - real time interaction vs. asynchronous distributed parallel activities

- How AG is being used these days?
  - Test/demo
  - Administrative meeting
  - Research use
  - Educational lecture
- Best for group interaction:
  - Audio, video, presence, simultaneity, sequentiality, & interactivity
- Human factors for interaction tool:
  - Design interactivity, support collaboration

- Design interactivity:
  - Issue: In group meetings, how do individuals obtain desirable information and advice quickly from the most suitable person in other groups?
  - Design: Extend backchannels for posting questions and offering answers
  - Issues: Many group meetings are actually spent with one or two central speakers using most of meeting time. How to encourage others to participate?

- Design interactivity (continued):
  - Design: Arrange unstructured and causal meetings to overcome general silence in front of persons of higher status and power
  - Issue: Build trust between groups to enhance collaboration
  - Design: Clarify context in which interaction is to occur; make clear commitments; schedule not-task-oriented meetings

- Discussion:
  - The interface of collaboration describes how day-to-day interactions and exchanges between partners are managed, the extent to which their respective contributions are mixed or kept separate, and the operational linkages between them. How do we design this interface in CVE?